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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte KOSHJAR HAMEDI and GUSTAF JOHANSSON

Appeal 2016-005260
Application 12/865,551[1]
Technology Center 2600

Before ROBERT E. NAPPI, JENNIFER L. McKEOWN, and JOYCE CRAIG, *Administrative Patent Judges*.

McKEOWN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134(a) from the Examiner's Final Rejection of claims 1, 4, 7–10, and 13–16. Claims 2, 3, 5, 6, 11, and 12 have been cancelled. App. Br. 3. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

STATEMENT OF THE CASE

Appellants' invention "relates generally to 3d modeling and visualization using polygonal meshes for computer graphics, and more

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[1] The real party in interest is Donya Labs AB.

particularly to techniques for semi-automatic optimization of polygonal 3d mesh models." Spec. p.1, ll. 4–6.

Claim 1 is illustrative and is reproduced below:

> 1. A method of locally optimizing an initial mesh model comprising data in three dimensions or more, which data comprises a plurality of faces each defined by a plurality of vertices connected by edges, the method comprising the steps of:
>
> a) rendering at least a part of the initial mesh model on a display;
>
> b) receiving a first input from a user delineating a subpart of the displayed initial mesh model;
>
> c) receiving a second input from the user for adding or removing data from the subpart of the displayed initial mesh model;
>
> d) creating a new mesh model by either:
>
> i) adding data to the subpart of the displayed initial mesh model by replacing a vertex in said subpart with a pair of vertices defining a corresponding edge, or
>
> ii) removing data from the subpart of the displayed initial mesh model by removing an edge in said subpart wherein the pair of vertices connected by said edge is replaced by a single vertex; and
>
> e) rendering the new mesh model on the display,
>
> wherein the steps b) - e) are repeated at a frequency greater than 10 Hz.

THE REJECTIONS

Claims 1, 4, and 7 are rejected under 35 U.S.C. § 103(a) as unpatentable over Chang et al. (US 2003/0091227 A1; May 15, 2003), Zhou et al. (US 2006/0284880 A1; Dec. 21, 2006), and Ogrinc et al. (US 8,334,857 B1; Dec. 18, 2012). Final Act. 4–11.

Claims 8–10 are rejected under 35 U.S.C. § 103(a) as unpatentable over Chang, Zhou, Ogrinc, and Dayanand et al. (US 2007/0080960 A1; Apr. 12, 2007). Final Act. 8–10.

Claims 13–15 are rejected under 35 U.S.C. § 103(a) as unpatentable over Chang, Zhou, Ogrinc, André Gueziec et al., A Framework for Streaming Geometry in VRML, IEEE Computer Graphics and Application (March/April 1999), and Jihad El-Sana and Amitabh Varshney, Generalized View-Dependent Simplification, Eurographics, Vol. 18, No. 3. (1999). Final Act. 10–13.

Claim 16 is rejected under 35 U.S.C. § 103(a) as unpatentable over Chang, Zhou, Ogrinc, and Hoppe (US 5,929,860; July 27, 1999). Final Act. 13–14.

ANALYSIS

THE OBVIOUSNESS REJECTION BASED ON CHANG, ZHOU, AND OGRINC

Claims 1, 4, and 7

Based on the record before us, we are not persuaded that the Examiner erred in rejecting claims 1, 4, and 7.

Appellants argue that the combination of Chang, Zhou and Ogrinc fails to teach or suggest "rendering the new mesh model on the display, wherein the steps b) - e) are repeated at a frequency greater than 10 Hz." App. Br. 9–11. In particular, Appellants allege that

> the combination of Chang, Zhou, and Ogrinc would teach performing steps b), c), and d), which are allegedly taught by Chang and Zhou, and repeating step e) at a frequency greater than 10 Hz (if refreshing a display constitutes "rendering the new mesh model" as claimed, which it does not). The claims, however, provide for repeating steps b) - e) at a frequency greater

> than 10 Hz, and not just "refreshing a display" as alleged by the Examiner to be disclosed by the combination.

App. Br. 10; *see also* App. Br. 12–13; Reply Br. 2–4.

As an initial matter, we consider the scope of the disputed limitation. Appellants identify page 2, lines 14–16 of the Specification as support, which states that "steps of 2 to 3 can [] be repeated in order to create an interactive method of optimizing the model. This repeating step can be performed at interactive display rates such as > 10 Hz." According to Appellants, claim 1 requires each of steps b-e be repeated at a frequency greater than 10 Hz.

The Examiner, however, explains that "it is well known in the art, rendering is a process of generating an image from a model, [and that] a rendering pipeline has a frequency to process graphics data that is corresponding to a display frequency (e.g., refresh rate)." Ans. 4. In other words, a skilled artisan would understand the recited frequency of greater than 10 Hz to apply to display frequency or refresh rate for rendering the model.

We also note that the Specification refers to interactive *display* rates as greater than 10 Hz. Spec., p. 2, ll. 14–16. Further, because each of steps b and c of claim 1 receives a first and second input *from a user*, Appellants interpretation would require a user, such as a graphic artist (Spec. p. 5, ll. 14–16), to provide the recited first and second input at the recited rate, *i.e. a rate of 10 times (or more) per second.* Notably absent from either the claims or the Specification is any description or explanation as to how inputs could be received, from a user such as a graphic artist, at this recited frequency.

As such, we find Appellants' interpretation, that each of steps b-e be repeated at a frequency greater than 10 Hz, is unreasonable.

We are not persuaded, then, that the Examiner erred in interpreting the frequency limitation to apply to the rendering of a new model step. As the Examiner finds, Chang describes an interactive process where a user can "change the location of vertices and add or remove polygons to improve the accuracy or appearance of the polygon mesh" and that a user can incrementally refine the model. *See, e.g.*, Chang ¶ 63. These teachings at least suggest that the user input step, as well as the creating a new model and rendering the new model steps, are repeated. Further, Ogrinc teaches a refresh rate, i.e. a repeated display rate, greater than 10Hz. Ogrinc, col. 6, ll. 44–48. We agree with the Examiner that these teachings combined satisfy the disputed limitation of rendering the new mesh model on the display, wherein the steps b) - e) are repeated at a frequency greater than 10 Hz.

Next, Appellants argue that because the Examiner admits that Chang does not teach or suggest step b, Chang cannot teach or suggest steps c and d. App. Br. 11–12. This argument, however, fails to consider the combination of Change with Zhou, which the Examiner relies on as teaching step b. One cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *See In re Keller*, 642 F.2d 413, 426 (CCPA 1981); *In re Merck & Co.*, Inc., 800 F.2d 1091, 1097 (Fed. Cir. 1986).

Appellants additionally assert that a skilled artisan would not combine Chang with Zhou. App. Br. 12; Reply Br. 4–5. According to Appellants, the selection of a region in Zhou is for texture mapping and,

> [t]hus, it is not clear why one skilled in the art would look to combine Zhou's teaching of selecting a region of a 3D mesh (for the purposes of texture mapping) with Chang's teaching of modifying a polygon mesh as there is no reason to select regions in Chang because the polygon mesh is being modified as a whole.

App. Br. 12.

We disagree. As the Examiner explains,

> [t]he motivation for [modifying Chang's process to use Zhou's specified region based on user input] would have been providing a mesh simplification procedure for constructing a progressive mesh representation from an arbitrary mesh. In addition, improving processing efficiency by reducing calculation complexity.

Ans. 8. Chang also expressly notes that selecting a subset (or a subpart) *may reduce processing power*. *See, e.g.*, Chang ¶ 58. The Examiner, thus, articulates some reasoning with some rational underpinning to sufficiently support the legal conclusion of obviousness.[2] Therefore, we are not persuaded that the Examiner erred in concluding it would have been obvious to combine Change and Zhou.

Accordingly, we sustain the rejection of claim 1, as well as claims 4 and 7 not argued with particularity, as unpatentable over Chang, Zhou, and Ogrinc.

[2] We also note that the Examiner is not taking "Official Notice" of facts, without citation of references as alleged by Appellants, but rather is merely further explaining the reasoning to support the legal conclusion of obviousness. *See, e.g., KSR Int'l. Co. v. Teleflex, Inc.*, 550 U.S. 398, 418 (2007).

THE REMAINING OBVIOUSNESS REJECTIONS

Claims 8–10 and 13–16

Appellants do not separately argue the patentability of claims 8–10 and 13–16, and instead rely on the arguments presented for claim 1. *See, e.g.*, App. Br. 13–14. For the reasons discussed above, we are not persuaded that the Examiner erred in rejecting claim 1. Accordingly, we also sustain the Examiner's rejection of claims 8–10 and 13–16 as unpatentable over the cited combinations of prior art.

DECISION

The Examiner's decision rejecting claims 1, 4, 7–10, and 13–16 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED